# Nikola Tesla

## *The Real Inventor of Our A.C. Power System and of Radio*

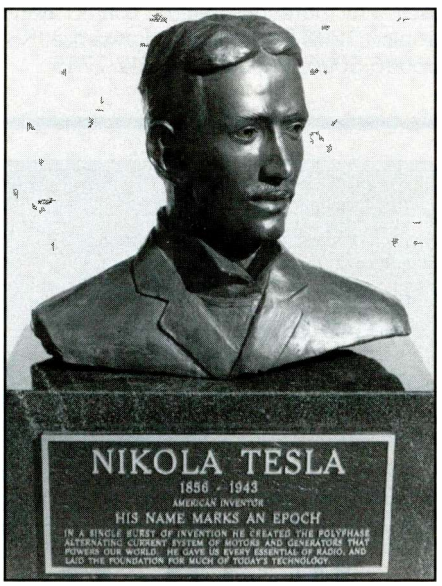
**BY JOHN W. WAGNER**

At the stroke of midnight, when July 9 became July 10, 1856, Nikola Tesla was born. Within the first 26 years of his life he had conceived the rotating magnetic field principle—a culminating breakthrough in power technology after Michael Faraday's monumental discovery of electromagnetic induction in 1831. Tesla's discovery made possible the polyphase generation and distribution over long distances of virtually unlimited electrical energy in the form of 60 cycles (Hertz) AC.

After solving the AC conundrum, Tesla had no further interest in low frequency work and moved on to explore the world of high frequency phenomena. By 1890, he had conceived his famous "Tesla coil," still used as a major component in numerous electronic devices. By 1893, he had conceived, explained, and demonstrated the "four-tuned circuits," making possible the theories of Maxwell and Hertz on the transmission of intelligence. In 1893, he made the first "wireless" transmission before the National Electric Light Association in St. Louis; it is this essential understanding that exists today in all modern radios. These principles served as the foundation for his U.S. patents that took priority over Marconi's basic patents. On June 21, 1943, the United States Supreme Court ruled on Case No. 369, identified as "Marconi Wireless Telegraph Company of America vs. United States." The Court rendered invalid Marconi's basic patent No. 763,772 dated June 28, 1904. Tesla's patent No. 645,576 of March 20, 1900, and its subdivision patent for apparatus No. 649,621 dated May 15, 1900, had priority.

Our modern-day understanding of radio is very different from what people knew in those early days. Therefore, it is essential to state a definition of radio that encompasses only that which is indispensable as an embryonic commencement of our present day technology. Lack of understanding in this embryonic area is where most modern technologists and historians become confused, and understandably so. Nevertheless, without the conception of the radio "embryo," those basic elements underlying its fundamental principles, there would be no radio; and without a delimitative definition, there could not have been a definitive decision of who really invented those basic elements essential to our modern-day radio technology.

The following definition served the Supreme Court well because it was then able to render a decision: "A radio communication system requires two tuned circuits, each at the transmitter and receiver, all four tuned to the same frequency." It is this "four-tuned circuit invention" that Tesla patented, published, and explained that led to future advancements.


NIKOLA TESLA
1856 - 1943
AMERICAN INVENTOR
HIS NAME MARKS AN EPOCH
IN A SINGLE BURST OF INVENTION HE CREATED THE POLYPHASE ALTERNATING CURRENT SYSTEM OF MOTORS AND GENERATORS THAT POWERS OUR WORLD. HE GAVE US EVERY ESSENTIAL OF RADIO; AND LAID THE FOUNDATION FOR MUCH OF TODAY'S TECHNOLOGY

*Bust of "Nikola Tesla," offered to Smithsonian and refused.*

Many Tesla followers made progressive refinements in the technology, thus developing it to its present state. Most of us tend to attribute the birth of radio to early technologists who made the first refinements, but it was Tesla had laid the foundation. Puzzling to many, however, is that Tesla's greatest contributions, AC power distribution and fundamentals of radio, are either unknown or challenged bitterly.

It is easy to understand why most people have a distorted understanding of just who was the real inventor of radio. First, it was the newspapers that hailed Marconi's first successful transatlantic radio transmission; then textbooks followed with their depiction of that exciting event. Both media sources had already raised the flag of victory for Marconi, so it is easy to understand Tesla's dismay—he had done much of the pioneering work.

A similar media blitz is responsible for Thomas Alva Edison becoming a familiar household name. In reality, Mr. Edison did not create or develop our system of alternating current electricity. History of "The War of the Currents" shows how he fought its adoption bitterly, choosing instead to promote a system of direct current that had already been invented by others. In short, Mr. Edison's brief role in the electrical; power industry was that of entrepreneur who failed, rather than an inventor.

In 1988-89, the writer's students commissioned a bust of Tesla (appraised at $6,000) to donate to any large museum. After discovering that the Smithsonian made no recognition of Tesla, we offered our bust. Our offer was promptly refused. Later we discovered their curator was displaying a bust of Edison alongside Tesla's motor/generator. He also displayed photographs of the Niagara Falls power plant showing one of its original Tesla generators. A large brass inscription plate listed Tesla's patents, but there was no reference to Tesla. In the middle of the display stood a life-size replica of Edison with the caption, "While the Niagara AC plant was being built by Westinghouse, Edison was busy with other important things." The caption did not explain what these "other important things" were, nor why this was relevant to the Niagara AC power plant.

The Smithsonian Book of Invention is a prodigious 3/4-inch thick book of America's greatest inventors and their inventions. Tesla's name does not appear anywhere in that publication. The writer is amazed by these historians when they ignore Tesla's contributions in their chapters depicting the evolution of electric power and radio.

The curator meticulously traces the history of electricity from Volta to Edison, naming the 43 significant contributors, yet Tesla's name is missing. Instead, the curator shows pictures of the Niagara Falls Power project and readers are carefully guided into believing that this was the work of Edison. Yet it was Tesla's polyphase AC system the power commission adopted, and licenses had to be issued to use Tesla's patents. Money for this publication came from the Thomas Alva Edison Foundation.

Tesla is one of only two Americans honored by International Electrotechnical Congress in Munich. In 1956, the unit of magnetic flux density in the MKS system was designated the *tesla*. Thus, his name is alongside only 15 others, such as Volta, Faraday, Ohm, Watt, an Ampere. ■